Craighead Environmental Research Institute

Monthly Progress Report: August, 2007

for the Montana Department of Transportation and
Western Transportation Institute

Bozeman Pass Wildlife Monitoring
MSU banner number 425539

1 August 2007 – 31 August 2007

This is a monthly progress report for August 2007 on the Bozeman Pass Post-Fencing Wildlife Monitoring subcontract: MSU banner number 425539. This is a continuation of Task C of the Bozeman Pass Wildlife Channelization ITS Project which was extended with a subcontract addendum, extension and (the first of two) post-fencing monitoring work scope(s) for CERI to continue their wildlife monitoring field data collection efforts. This addendum covers a limited work scope for one (of two related) contract(s) between WTI and MDT (MSU banner number 425539). It was anticipated that the funds in this account/contract would support CERI in their work through approximately May 2007. A subsequent subcontract associated with the second, related contract (MSU banner number 426899) between MDT and WTI was established for CERI to complete monitoring and evaluation efforts. Ultimately, data produced from both contracts/subcontracts will be merged and analyzed to address the research questions related to wildlife-vehicle collisions and wildlife movements under I-90.

This report was prepared by staff at the Craighead Environmental Research Institute (CERI) for the Montana Department of Transportation and Western Transportation Institute as part of the Bozeman Pass Wildlife Channelization ITS Project.

The objective of Task C (MSU Office of Sponsored Programs subcontract GC200-03-Z3137) is to collect, manage, and analyze field data on wildlife traffic victims and wildlife movements on and near I-90 on Bozeman Pass in order to evaluate the effectiveness of wildlife mitigation techniques applied in this area. The Craighead Environmental Research Institute (CERI) oversees the wildlife monitoring aspects of this project. This task includes oversight of :

- Road-kill data collection and data management;
- MRL overpass monitoring including
  - Behavioral observation sessions of animal-road crossing events
  - Collecting tracking event data from track bed/plate(s)
- Maintaining remote motion/heat-triggered still film cameras at existing culverts
- Supervise field technicians with data collection protocols and quality control;
- Data analysis of road-kill and behavioral crossing data;
- Develop GIS maps and analyses;
- Prepare monthly, quarterly and annual reports and publications.

Task 1: Road Kill Surveys during August 2007

Road kill surveys were conducted between Bozeman and Jackson Creek. Surveys were conducted on both sides of I-90 from Bozeman to Jackson Creek and back for a total of 22 miles round trip and an estimated 1 hour of labor per survey. CERI personnel recorded road-kill on approximately a three-times-weekly basis. Documenting animal-vehicle collisions will continue through June 2010 during the post-construction phase. Because of some close calls with traffic while stopped on the shoulder during road kill surveys and camera installation, we purchased two emergency flashing lights for our vehicles.

Sixteen (16) road-kill surveys were driven during August of 2007. Four (4) of those recorded no new road-kill. At 22 miles per survey this equals 264 miles driven in June. Thirteen (13) road-kill surveys were driven during July of 2007. Two (2) of those recorded no new road-kill. At 22 miles per survey this equals 352 miles driven in July. Previously data had been collected for a 50 mile stretch (both lanes of Interstate 90 for 25 miles each way between Bozeman and Livingston. This survey effort was reduced to 22 miles for the monitoring subcontract but CERI has continued to survey the entire highway segment and is supplementing the survey budget with funding from other sources. Totals of animals killed by species were:

Bozeman Pass Roadkill Totals	**August**
Species	**Number**
Badger	0
Beaver	0
Bird Spp.	1
Black Bear	0
Cowbird	2
Coyote	0
Deer species	1
Dog	0
Domestic cat	0
Elk	0
Gopher Snake	0
Gray Partridge (Hun)	1
Great Blue Heron	1
Great Horned Owl	1
Ground Squirrel	0
Grouse	0
Magpie	4
Mallard	0
Marmot	0
Meadowlark	0

Mink	0
Mule Deer	1
Pheasant	1
Porcupine	0
Rabbit	1
Raccoon	1
Rattlesnake	0
Red Fox	2
Skunk	10
Small mammal spp.	2
Weasel	1
White Tail Deer	8

Task 2: Track bed monitoring at the MRL Bridge in August 2007

Wildlife track data was collected for over one year prior to the time of the bridge re-build. The track bed was monitored on average about every other day; tracks were recorded and the surface was raked clean. Daily visits were done during inclement weather since rain and wind can obscure some tracks if left too long. Deer have been the main users of the underpass. Deer use has been summarized by number of crossings per day whenever possible. This metric will allow comparisons to be made between seasons and to compare rates of crossing before the fencing and bridge re-build with rates after construction.

Sand track beds at MRL bridge are to be monitored for wildlife tracks as an index of movements under the interstate every other week from the time the track beds have thawed and can accept tracks of passing animals (i.e., ~April) through June 2010 for a total of 14 sampling sessions per year. Each sampling session will include visiting the track beds 5 days in a row (i.e., rake on day 0, record tracks on day 1, day 2, day 3 and day 4) for a total of 70 track bed site visits per year. Mileage expenses are included for days when no road kill surveys are scheduled (e.g., Tuesdays and Thursdays of sampling weeks).

Completion of the track bed was finally accomplished on 20 June, 2007. During July there was still some heavy equipment using the area occasionally until about 27 July when the temporary vehicle crossing over the MRL rails was finally removed. The track bed was restored at the end of July and track bed surveys began in early August. Three track bed sampling sessions were completed in August.

Task 3: Photo monitoring at fence ends through August 2007

3 of 4 remote-trigger IR flash (invisible to passing drivers) digital cameras were placed at the 4 termini of the wildlife fencing. Monitoring will occur year-round. Camera setup (including equipment purchases and theft-proofing) took about 5 hours initially. Data downloading will occur in conjunction with MRL track bed visits but cameras do not have to be checked as frequently as the track beds are checked. CERI

installed most of the cameras on June 13. Two were mounted near the fence ends at the East end of the project. One was mounted underneath the I-90 bridge over Bear Canyon Road. WTI has provided CERI with 4 Reconyx digital IR flash cameras with battery holders at no cost for CERI's use throughout the three-year monitoring effort. Additional budget has been included in this task for CERI to purchase additional necessary accessories.

Task 4: Infrared counter monitoring at jump outs through August 2007

Infrared counters are used to quantify numbers of animals moving over the jump outs. A total of 4 infrared counters were placed at jump outs to monitor wildlife movements; setup (including equipment purchases and theft-proofing) took about 5 hours initially and data downloading is expected to require 1.5 hours per visit CERI installed the remote counters on June 13 at the four jump out locations. In late July 4 additional hours were needed to fine-tune the equipment in order to optimize results. WTI provided CERI with infrared counters at no cost for CERI's use throughout the three-year monitoring effort. Additional budget has been included in this task for CERI to purchase additional necessary accessories.

Fine-tuning the jump-out counters has proven to be more problematical than the cameras. Even at lowest sensitivities the Trailmaster sensors are triggered by false events. Adjustment of counter sensitivity settings continued throughout August: although the sensors needs were masked with tape to narrow the window through which events are sensed many spurious events are recorded. This fall we will experiment with some type of hood over the counters to shade the sensors since the one sensor facing north which is not struck by sunlight is the only one that has very few false counts.

Task 5: Track bed monitoring at fence ends, jump-outs through August 2007

Track beds are used to verify data collected on remote cameras and counters in case those systems fail or prove unreliable. Species identification from track beds will complement counter data at jump-outs. A total of 8 sand track beds (4 on top of and 4 at the bottom or exit of the 4 jump outs), were planned to be monitored on the same schedule as the track bed at the MRL bridge (see task 2); i.e., from the time the track beds have thawed and can accept tracks of passing animals (i.e., ~April) through April 2010. Initially it was decided that track beds were only needed at the top of each jump out and those were constructed in June and July. Improvements in track beds totaling an additional 12 man-hours continued in August. Each sampling session will include visiting the track beds 5 days in a row (i.e., rake on day 0, record tracks on day 1, day 2, day 3 and day 4. Mileage expenses are covered in task 2. No animal tracks were recorded at jump-outs in August, and preparation of the track beds continued throughout the month. Track beds at the bottom of the jumpouts should provide useful information on animals entering or leaving through the space between the fence and the jumpoout wall; coyotes, raccoons, and other animals may enter inside the wildlife fence through this gap. These track beds will be constructed in September.

Task 6: Photo monitoring of culverts January through April 2007

Two infrared remote-trigger cameras are used in the double culverts at the eastern fence ends; these below-grade culvert movement data will be combined with data from at-grade fence end-runs to assess total movement in that area. CERI installed one of the cameras on June 13. Setup (including equipment purchases and theft-proofing) took about 3 hours and data downloading is expected to require 5 visits per year, with each visit taking approximately 1.5 hours to maintain the camera equipment and download data. Only one camera was installed at that time since extremely high water in the second culvert made installation difficult and dangerous. The second camera was installed on July 24.

Theft-proofing of the culvert cameras is accomplished by placing the cameras on the roof of the culvert about 12 feet above the water. A large extension ladder was used. In August existing holes with bolts in the culvert were used to secure the camera with a cable and lock. Neither of the culvert cameras were downloaded in August.

Task 8: Data Management & Reporting in June 2007

Data is entered, cleaned and archived by CERI. Data is managed in a manner that will allow for CERI and WTI to analyze and report final results as a team (e.g., keys for spreadsheet headers and other relevant notes will be included in data files).
CERI will send brief monthly reports with associated monthly invoices to WTI describing their efforts for that month including a summary of the data collected, equipment purchases or malfunctions (including any thefts of equipment) and any anticipated absences or difficulties with accomplishing tasks. Data entry and summary required two hours during August.

Discussion

Supplies and labor for the various tasks budgeted under this project have differed somewhat from the original proposal. Overall, however, the amounts budgeted are close to the amounts required. Total supplies were estimated to cost $2622.50. To date we have spent $2500.45. Total labor for construction and installation was estimated to cost $2880 and require 96 man-hours. To date 46 man-hours have been required costing $1380.00. Additional labor will be required to complete track beds at the bottom of jumpouts and to maintain and improve existing trackbeds, camera installations, and infrared counters through the next 3 years of the project.

After a month of trackbed surveys it is too early to tell if there is more use of the underpass than there was before the fencing was installed. So far we have recorded no roadkill within the fenced section of the highway (with the exception of birds, most notably a great blue heron). We have a report from a credible biologist of a mountain lion crossing the highway successfully just at the east end of the fence. So far only one animal, a beaver, has been recorded passing through the culverts.